Volunteer Lake Assessment Program Individual Lake Reports

RUST POND, WOLFEBORO, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,651	**Max. Depth (m):**	12.2	**Flushing Rate (yr^{-1}):**	0.6
Surface Area (Ac.):	210	**Mean Depth (m):**	7.4	**P Retention Coef:**	0.68
Shore Length (m):	4,800	**Volume (m^3):**	6,310,500	**Elevation (ft):**	579

TROPHIC CLASSIFICATION

Year	Trophic class
1981	MESOTROPHIC
2000	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

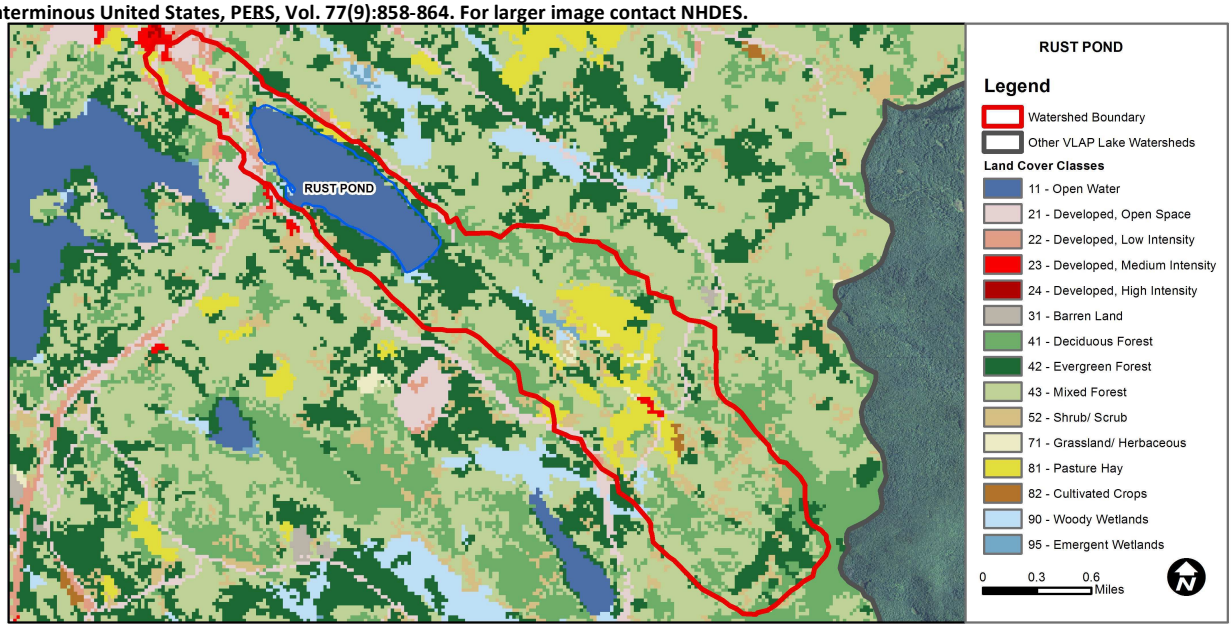
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

RUST POND - WOLFEBORO CAMP SCHOOL BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	12.4	Barren Land	0	Grassland/Herbaceous	0.5
Developed-Open Space	3.73	Deciduous Forest	15.42	Pasture Hay	9.68
Developed-Low Intensity	1.45	Evergreen Forest	14.69	Cultivated Crops	0.24
Developed-Medium Intensity	0.48	Mixed Forest	34.07	Woody Wetlands	0.99
Developed-High Intensity	0	Shrub-Scrub	6.04	Emergent Wetlands	0.38

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
RUST POND, WOLFEBORO, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were very low throughout the summer and well below the NH lake median. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were slightly greater than the NH lake median at all stations except North End Inlet. North End Inlet conductivity was much greater than the rest of the lake as it receives stormwater runoff and snow melt from a major state roadway as well as several smaller roads.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low throughout the summer. Historical trend analysis indicates a significantly improving (decreasing) epilimnetic (upper water layer) phosphorus level since monitoring began. We hope to see this trend continue! Boulder Brook phosphorus was elevated in June and the turbidity was also elevated indicating potential sediment contamination. North End Inlet phosphorus was elevated throughout the summer and turbidity was also elevated indicating low flow conditions and potential sediment contamination.
- **TRANSPARENCY:** Transparency improved as the summer progressed, improved from 2010 and 2011, and was greater than the NH lake median. However, historical trend analysis indicates a significantly worsening (decreasing) transparency since monitoring began.
- **TURBIDITY:** Deep spot turbidity was relatively low; however tributary turbidity was generally elevated throughout the summer indicating low flow conditions due to the dry weather.
- **PH:** Historically, pH levels have fluctuated below desirable levels.
- **RECOMMENDED ACTIONS:** In 2010, the Town of Wolfeboro received grant funds to implement stormwater improvement projects addressing sedimentation in North End Inlet and the Rt. 28 boat launch. These should help reduce the sediment and phosphorus loading to the lake from the tributary. Conduct chloride monitoring at North End Inlet to establish baseline chloride levels. Keep up the great work!

Table 1. 2012 Average Water Quality Data for RUST POND

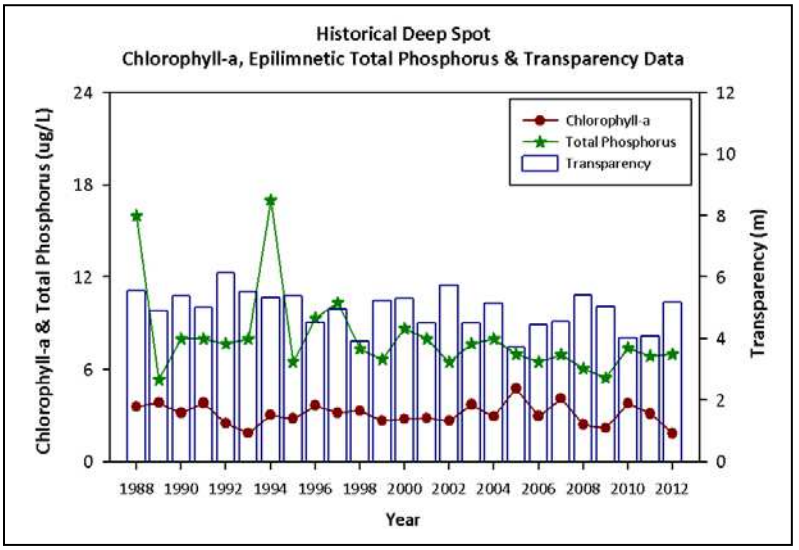
Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Boulder Brook				73.8	56			9.81	6.94
Deep Epilimnion	16.5	1.84	8	73.3	6	5.17	5.72	1.00	7.27
Deep Metalimnion				72.9	6			1.20	7.22
Deep Hypolimnion				74.2	12			2.20	6.82
North End Inlet				221.0	41			4.18	6.71
Outlet				73.9	6			1.12	7.28
Perry Brook			3	66.6	23			3.29	6.80

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Degrading	Data significantly decreasing (worsening).
Phosphorus (epilimnion)	Improving	Data significantly decreasing.



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